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Research Article

Human–wildlife conflict and local community attitudes towards wildlife conservation in Konta Special District, southwest Ethiopia

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Abstract

Understanding local communities' attitudes towards wildlife conservation is important for policymakers and conservationists in implementing sustainable wildlife conservation strategies. The present study was undertaken to assess local communities' attitudes towards wildlife conservation and the types of human–wildlife conflict (HWC) in the Konta Special District (KSD). A total of 95 household respondents were randomly selected for questionnaire interviews from two study kebeles. In addition, focus group discussions (FGD) and personal observations were used to collect qualitative data. Descriptive statistics and the chi-square test were applied to analyze the data. Overall, 51.6% of the respondents reported both crop damage and livestock depredation as the main types of HWC. The respondents ranked baboons (95.8%) and monkeys (65.5%) as the principal wildlife responsible for property damage. Habitat loss (75.6%) was reported as the main threat to wildlife existence. A total of 91.6% of the respondents expressed a positive attitude towards wildlife conservation, and there was no statistically significant difference between study kebeles, sex, or education level of respondents. Guarding (75.8%) was identified as the dominant traditional method used to reduce damage. Development activities should not compromise wildlife conservation goals. Employing effective protection methods and providing alternative livelihoods such as ecotourism, beekeeping, and livestock fattening were recommended to ensure coexistence between humans and wildlife and to promote sustainable development in the KSD.

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Key words: Attitude, human–wildlife conflict, Konta Special District, wildlife conservation

Introduction

Nowadays, wildlife is in danger of extinction globally due to anthropogenic factors (Gebresenbet et al. 2017), and mutual coexistence between humans and wildlife has become increasingly challenging. Due to the fast population growth in developing countries like Ethiopia and the fact that the majority of people rely on subsistence farming for their livelihood, there is a need for land for settlement, agriculture, and livestock grazing (Alemkere 2018). These factors have led to the conversion of land for human needs and resulted in loss, degradation, and fragmentation of wildlife habitat (Woldegiorgis and Mekonnen 2021),

which incites competition for resources and causes scarcity for wild animals' survival and reproduction (Temesgen et al. 2022).

Many research findings have reported that the active participation of local communities in decision-making processes and the receipt of benefits from conservation efforts enhance favorable effects on local communities' attitudes towards wildlife conservation. Younger and literate people have shown greater appreciation of conservation objectives (Megaze et al. 2017; Hariohay et al. 2018; Dar et al. 2022; Matusal et al. 2023). For instance, more than 76% of the educated respondents expressed a positive attitude towards the conservation of chimpanzees in Cameroon (Njukang et al. 2019). However, misunderstandings about conservation objectives (Guzman et al. 2020), costs associated with crop and property damage, predation (Matusal et al. 2023), attacks by wild animals on humans, restricted access to resources, penalties for illegal grazing, lack of compensation, and displacement due to conservation programs (Tilahun et al. 2017; Alemkere 2018; Temesgen et al. 2022) could negatively influence local communities' attitudes. Livestock depredation and crop damage by wild animals cause significant economic losses for households that depend mainly on subsistence farming. This, in turn, has resulted in retaliatory killing and destruction of wild animals' habitats unless compensation was provided for their losses due to wild animals damage (Deneke et al. 2022).

Moreover, the religion and culture of local people, as well as past experiences and relationships, may significantly influence individual behavior and shape positive or negative attitudes towards wildlife conservation (Amoo et al. 2023). For example, people living near Ethiopian Orthodox Tewahedo Churches do not disturb or kill wild animals because they believe killing is a sin (Teklay et al. 2015). On the contrary, people often have negative attitudes towards snake species, believing they are symbols of evil spirits and bad luck, and also out of fear (Babalola et al. 2020).

Although communities bear most of the costs of conservation (Kebede et al. 2014), the process of designating several protected areas in developing countries has often excluded local people from decision-making. This exclusion leads to a loss of sense of ownership and antagonism towards conservation objectives (Abebe and Bekele 2018). In addition, proximity and competition for resources create frequent encounters between humans and wildlife. These encounters lead to HWC and cause local people to develop unfavorable attitudes towards wildlife conservation.

The majority of the world's biological diversity exists either outside protected areas or in landscapes shared with indigenous peoples. Thus, there must be a high level of interaction between indigenous people and wild animals. As a result, conservation success is unlikely in the absence of local community empowerment and involvement (Armitage et al. 2020). Hence, understanding the attitudes of local people is important for identifying the factors that influence community perceptions and for developing and implementing approaches that attract both stakeholders and the general public to support conservation (Njukang et al. 2019).

In recent decades, the original habitats of wildlife have been dramatically lost due to anthropogenic factors, climate change, pollution, and the expansion of invasive species in Ethiopia. At the same time, local people's dependence on natural resources has greatly increased (Tilahun et al. 2017). This is also true in the KSD, where subsistence agriculture is the major livelihood of local people

and where road and hydropower development, human-induced fires for the expansion of agriculture and settlement, and illegal hunting are considered major threats to wildlife and its habitats. Therefore, the present study was designed to assess the types of HWC, to identify the main problematic wild animals, to examine the possible solutions used by the local community to mitigate conflicts, to identify the main threats to wildlife conservation, and to assess local community attitudes towards wildlife conservation in the KSD.

Materials and methods

Description of the study area

KSD is located between 1,200 and 1,640 m a.s.l. and lies at 6°30'N–7°25'N and 36°15'E–36°55'E (Fig. 1). The area has a unimodal rainfall distribution, with the highest rainfall occurring from July to September. The mean annual rainfall and temperature of the KSD were 1,374.1 mm and 22.98°C, respectively. Combretum–Terminalia woodland, savanna grassland, and dry evergreen montane forest are the predominant vegetation types of the district (Bekalo et al. 2009;

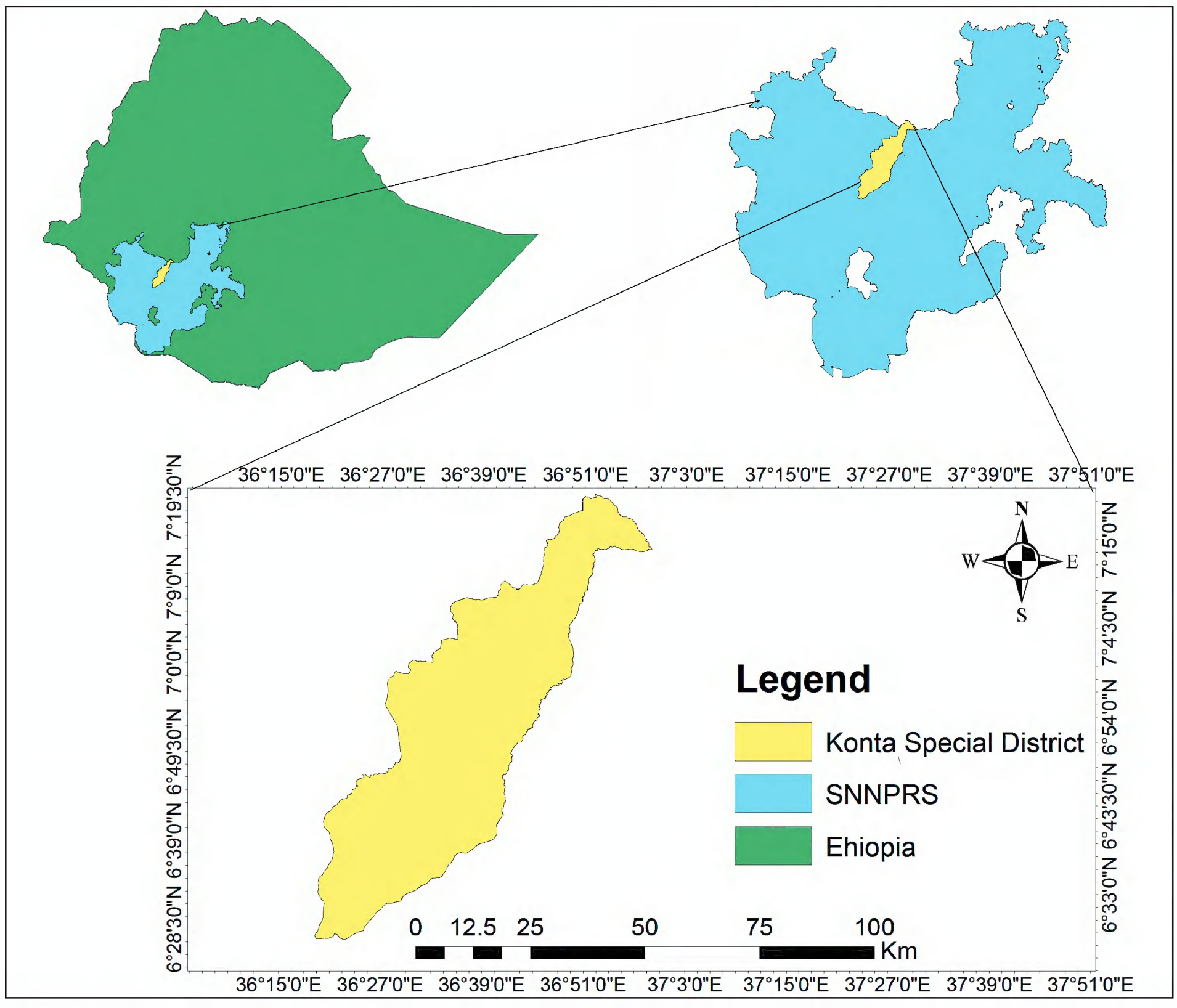

Figure 1. Map of the study area (SNNPRS: Southern Nations, Nationalities, and People Regional State).

Abera and Tesema 2019). Large predators such as lions, spotted hyenas, and leopards, and herbivores such as African elephants, buffalo, greater kudu, various antelope species, and primates (including the endemic and vulnerable subspecies of blue monkey) contribute to the district's faunal diversity (Biru et al. 2022). A total of 115,898 people inhabit the district, of whom more than 51% are female, and 84.8% live in rural areas (Abera and Tesema 2019). Konta is the dominant ethnic group (86.19%), and 85.14% of the population speaks Konta as a first language. Subsistence mixed farming is the main livelihood in the district. Goats, sheep, donkeys, mules, and chickens are the most commonly reared livestock. Fruits, teff, maize, sorghum, and spices are the main crops cultivated by local people, while forest coffee and wild honey are also harvested as supplementary sources of income (Bekalo et al. 2009; Abera and Tesema 2019).

Methods of data collection

Site selection and survey techniques

The study was conducted among local people from February to March 2021. Prior to the interviews, a preliminary survey was conducted to assess the clarity of the questions and to select study kebeles (lowest administrative units) based on accessibility and the prevalence of HWC. This was done in collaboration with local agricultural experts and traditional leaders. Based on this, Konta Koysha and Oshka Dech kebeles were purposefully selected for the study.

A systematic random sampling method was used to select sample households for the questionnaire interviews. First, the initial household was randomly selected by a lottery system from the list of registered households at the Kebele Agricultural Facilitation Centers. Subsequently, every third household was selected by skipping two households until the total sample size was reached. In cases where a selected household respondent was unwilling to participate or absent, the neighboring household was interviewed instead. Interviews were held in respondents' homes with individuals aged 18 years or older (Mekuyie 2014; Temesgen et al. 2022), regardless of sex. According to the population and housing census of Ethiopia (CSA 2007), Konta Koysha and Oshka Dech kebeles have a total of 1,311 and 576 households, respectively. From these, a total of 95 sample households (5% of the total households) were selected for questionnaire interviews. Before the interviews, respondents were thoroughly briefed on the research objectives, and oral consent was obtained to ensure confidentiality of their responses.

A pre-tested semi-structured questionnaire was developed, translated into the local language "Konta," and administered by well-trained interviewers whose mother tongue is Konta. The responses were subsequently translated back into English. The questionnaire addressed the demographic backgrounds of respondents, the importance of wildlife conservation, trends of wildlife populations, major wildlife threats, HWC, and mitigation measures. To assess local people's attitudes towards wildlife conservation, respondents were asked, "Do you think that wildlife is important for the local people?" A "yes" response was classified as a positive attitude, whereas a "no" response was classified as a negative attitude.

Four FGDs (two from each kebele) were conducted, with group sizes ranging from seven to twelve participants. Participants included women, religious leaders, elders, and youths. Local agricultural experts attended the FGDs to facilitate and interpret the discussions, which were conducted in the local language, Konta. The experts also selected convenient sites for the FGDs. Data gathered from FGDs were used to support the information collected through the questionnaire interviews. A chi-square test and descriptive statistical analysis were conducted using SPSS version 25 software.

Results

Socio-demographic characteristics of respondents

A total of 95 respondents from two kebeles [Konta Koysha (69.5%, n = 66) and Oshka Dech (30.5%, n = 29)] were involved in the survey. Of these, 35 (36.8%) were female participants. Farming was the predominant activity, reported by 93 (97.9%) households. The majority of respondents (36.8%) were aged between 46 and 60 years, followed by those aged 31–45 years (31.6%). A total of 78.9% of respondents had lived in the area for more than 30 years. Most respondents (73.7%) were uneducated, while 24.2% had attended primary school and 2.1% secondary school (Table 1).

Table 1. Socio-demographic characteristics of surveyed respondents and their attitudes towards wildlife conservation (N = 95).

Variables	Category	Frequency	Percentages	Respondents attitude towards wildlife conservation (Do you think that wildlife conservation is important?)	
				Yes (positive)	No (negative)
Sex	Female	35	36.8	30	5
	Male	60	63.2	57	3
Age	18–30	21	22.1	21	0
	31–45	30	31.6	29	1
	46–60	35	36.8	30	5
	Above 60	9	9.5	7	2
Educational status	Illiterate	70	73.7	64	6
	Primary school	23	24.2	21	2
	Secondary school	2	2.1	2	0
Job	Farmer	93	97.9	85	8
	Employees	-	-	-	-
	Trade	-	-	-	-
	Student	-	-	-	-
	Others (Religious leader)	2	2.1	2	0
Years of residence	< 10	4	4.2	4	0
	10–20	3	3.2	3	0
	21–30	13	13.7	13	0
	>30	75	78.9	67	8
Study Kebeles	Konta Koyesha	66	69.5	60	6
	Oshka Dech	29	30.5	27	2

The majority of respondents (91.6%) expressed a positive attitude towards wildlife conservation in the study area (Table 1). There was no statistically significant difference in attitude across kebeles ($\chi^2 = 0.126$, df = 1, $p > 0.05$), sex ($\chi^2 = 2.472$, df = 1, $p > 0.05$), or educational background ($\chi^2 = 0.188$, df = 2, $p > 0.05$).

Types of HWC

More than half of the respondents, 49 (51.6%), mentioned both crop damage and livestock predation as the main types of conflict encountered with wild animals, while only 2 (2.1%) reported human attack as a cause of conflict in the study area (Table 2). The types of conflict experienced by the community showed no statistically significant difference across the study kebeles ($\chi^2 = 2.141$, df = 3, $p > 0.05$).

Table 2. Types of conflict the community encountered with wild animals.

Study Kebeles	Types of conflict			
	Crop damage only	Livestock depredation only	Both crop damage and Livestock depredation	Human attack
Konta Koyesha	16	15	33	2
Oshka Dech	9	4	16	0
Total	25	19	49	2

The olive baboon was ranked as the principal wild animal by 95.8% of respondents, while 65.3% ranked the vervet monkey as a secondary wild animal responsible for damage to human properties in the study area (Table 3).

Table 3. Major wild animals that cause damage to human lives and properties as ranked by surveyed respondents.

Wild animals	Rank (%)					
	1st	2nd	3rd	4th	5th	6th
Olive Baboon	95.8	2.1	-	-	-	-
Vervet monkey	-	65.3	2.1	21.1	-	-
Porcupine	-	2.1	49.5	2.1	-	29.5
Wild pig	2.1	30.5	4.2	1.1	30.5	-
Hyena	-	-	29.5	1.1	1.1	-
Python	-	-	2.1	-	-	2.1
Lion	-	-	9.5	29.5	-	-
Others	2.1	-	-	-	-	-

Others: buffalo, jackal, cheetah, warthog, bushbuck, colobus monkey, kudu, blue monkey.

Threats to wildlife conservation

The majority of respondents, 72 (75.6%), reported habitat loss as the main threat to wildlife, while 17 (17.9%) and 6 (6.3%) households reported illegal hunting and HWC, respectively, as threats in the study area (Table 4). There was no significant difference in the types of threats among the study kebeles ($\chi^2 = 0.662$, df = 2, $p > 0.05$).

Table 4. Major threats to the survival of wild animals in the present study area (N = 95).

Study Kebeles	Threats of wildlife survival		
	Habitat loss	Illegal hunting	HWC
Konta Koyesha	49	12	5
Oshka Dech	23	5	1
Total	72	17	6

Mitigation strategies

The majority of respondents, 72 (75.8%), reported that guarding day and night was used to protect crops and livestock from depredation. In contrast, 7 (7.4%) respondents reported that killing problematic wild animals was also used as a mitigation strategy (Table 5). The methods used to mitigate wild animal damage showed no significant differences between the study kebeles (χ^2 = 3.221, df = 2, p > 0.05).

Table 5. HWC mitigation strategies used by local communities in the study area.

Study kebeles	HWC mitigation strategies (N = 95)		
	Guarding day and night	Scarecrow (smoking, plastic and clothes)	Illegal hunting
Konta Koyesha	48	14	4
Oshka Dech	24	2	3
Total	72	16	7

Trends of wild animal populations in KSD

A total of 61.1% of surveyed respondents reported that wild animal populations in the study area are increasing, while 38.9% perceived that populations in their vicinity are decreasing (Table 6). Responses from interviewees about the population trends of wild animals revealed no significant variation among the study kebeles (χ^2 = 0.607, df = 1, p > 0.05).

Table 6. Perceived trends in wild animal populations by surveyed respondents (N = 95).

Trends of wild animals' populations	Responses of respondents	
	Frequency	Percentages
Increasing	58	61.1
Decreasing	37	38.9
I don't know	-	-
Total	95	100

Discussion

We found that local communities experienced both crop raiding and livestock predation, and occasionally human attacks, in the KSD. The olive baboon, vervet monkey, wild pigs, porcupines, and hyenas were reported as the major crop pests and livestock predators. To some extent, lions, pythons, buffalo, jackals,

cheetahs, warthogs, bushbucks, colobus monkeys, kudu, and blue monkeys were also reported as problematic wild animals present in the study area. Olive baboons and vervet monkeys were by far the most common crop pests and have been reported in different parts of Ethiopia and elsewhere in the world (Mc Guinness and Taylor 2014; Kifle and Beehner 2022; Thakur et al. 2022; Yazezew 2022; Ibrahim et al. 2023; Jaleta and Tekalign 2023). Focus group participants also reported that because baboons and monkeys are sophisticated social animals that do not fear humans, they are particularly difficult pests for females and children to drive away from crops. Older males were consequently compelled to tend croplands. In addition to crop-raiding behaviors, baboons prey on sheep and goats. As a result, the local community asserted that baboons and monkeys were the main source of conflict in the current study. In line with the present study, baboons were reported as the main predators of sheep and goats elsewhere in Ethiopia (Kifle 2021; Sebsibe 2022). The focus group discussants also highlighted that the conflict between humans and wildlife in the KSD has worsened over time. It is expected that wildlife habitats that have been actively destroyed by human activities will no longer be able to support the wild animals that inhabit them. As a result, wild animals frequently move to agricultural areas and human settlements in search of food and space to breed, which substantially increases HWC. Similar findings have reported that the continuous increase in human pressure on wildlife habitat affects habitat availability and quality, which results in HWC (Megaze et al. 2022; Kidane et al. 2024).

Wild pigs and porcupines were also rated as secondary and tertiary crop pests by 30.5% and 49.5% of respondents, respectively. In line with the current findings, studies conducted in Awi Zone, Ethiopia (Derebe et al. 2022), and in the Kailash Sacred Landscape of India (Hussain et al. 2018) identified wild pigs and porcupines as crop pests. Farmers in Central Italy also considered porcupines as major crop pests (Franchini et al. 2024).

Livestock predation was another cause of conflict between humans and wild animals in the present study. Hyenas, jackals, pythons, cheetahs, and baboons were involved. Hyenas were reported as the most nuisance predator in the area compared with other predators listed. This could be due to hyenas' flexible foraging behaviors and their ability to kill all types of livestock during both day and night (Temesgen et al. 2022; Matindike et al. 2023; Portas and Krofel 2024).

Only a few respondents blamed lions as livestock predators in the present study. The possible reason might be that lions mostly prefer to kill livestock when wild prey is absent in their vicinity (Sebsibe 2022; Wakoli et al. 2023). Matindike et al. (2023) also reported that low prey abundance in the Sengwa Wildlife Research Area contributed to high livestock depredation in Zimbabwe. In addition, local people's opinions regarding lion conservation are greatly influenced by cultural norms. For instance, local people living around Kafa Biosphere Reserve showed a positive attitude towards lion conservation due to cultural values (Gebresenbet et al. 2018). This was also observed in the present study area. However, the present findings contrast with those of Shibru et al. (2023), who reported that lions were the major livestock predators, followed by hyenas and leopards, in Maze National Park, Ethiopia.

Two of the surveyed respondents reported human attack as a cause of HWC, and some (7.4%) of the household heads also acknowledged retaliatory killing

as a mitigation method in the study area. Occasional attacks and threats to humans have been reported in areas inhabited by large carnivores, often resulting in retaliatory killing, as observed by Felix et al. (2022) in the Tarangire–Manyara Ecosystem, Tanzania, and Gebresenbet et al. (2018) in and around Gambella National Park, Ethiopia.

Local communities used guarding, scarecrows, and killing problematic wild animals to protect their properties from damage. The majority of respondents reported guarding as the primary and most effective method, which included the use of guarding dogs, shouting at animals, and burning fires around croplands. This is consistent with the findings of other studies (Wiafe 2019; Kumar et al. 2022). Shibru et al. (2023) also reported that guarding was the most effective method used by local communities to prevent livestock predation in Maze National Park, Ethiopia.

Most respondents indicated that there had been an increase in the number of wild animals, especially monkeys and baboons. However, during our field visits, we observed that wildlife habitats were being destroyed by anthropogenic activities, bringing humans and wild animals into more frequent contact (Fig. 2). This led to overlapping resource use, competition between humans and wild animals, and conflicts. This proximity could explain why the majority of surveyed respondents believed that wild animal populations were increasing in their locality (Temesgen et al. 2022).

The majority of respondents (91.6%) had favorable perceptions towards wildlife conservation in their locality despite the destruction caused by wild animals. In justification, respondents and focus group discussants noted that wild animals were sources of tourist attractions, and some wild animal species and their

Figure 2. A group of olive baboons around human settlements while searching for food.

products were also used for traditional medicine, while their habitats provided wild honey, wild coffee, and spices for local people. Furthermore, participants believed that wildlife conservation is important because it restricts the movements of wild animals, minimizes the frequency of human–wildlife contact, and reduces the damage caused by wild animals. Similarly, 90% of the local community living adjacent to the southwest of Mole National Park in Ghana expressed willingness to coexist with monkeys for different reasons despite their destructive behavior (Wiafe 2019). Molaliegn et al. (2018) and Biru et al. (2022) also reported that local communities may have positive attitudes towards wild animals as a result of using wild animals and their products as sources of food, traditional medicines, and cultural and spiritual values. In contrast, Erena et al. (2019) reported that local communities in Jorgo-Wato Protected Forest, western Ethiopia, had negative attitudes towards wild vermin animals that caused damage.

In the current research area, habitat loss, illegal hunting, and HWC were identified as the main threats to wildlife. Habitat destruction was the principal threat, driven by human activities. During our fieldwork, we observed active fires in wildlife habitats, induced by local people to clear land for agriculture and settlements, as well as to collect firewood and wild honey. In addition, many development activities were taking place in the area, such as the construction of a hydropower dam and roads, which ultimately destroyed wildlife habitats (Fig. 3). Studies in different parts of Ethiopia also reported the destruction of wildlife habitats for anthropogenic purposes, such as agriculture, settlement,

Figure 3. Major wildlife threats identified during the field survey in Konta Special District: **A.** Human-induced fire; **B.** Hydropower development; and **C.** Road construction.

and charcoal production, as a major threat to wildlife (Gibru and Temesgen 2021; Woldegiorgis and Mekonnen 2021). Among the five major threats listed by the IUCN on the status and threats to species, habitat destruction is considered a principal driver of extinction, even if it differs across taxa, ecosystems, and locations (Bellard et al. 2022; Hogue and Breon 2022).

Conclusion and recommendations

The findings of this study reported the existence of HWC manifested through crop damage, livestock depredation, and, to some extent, human attacks and retaliatory killing of wild animals. Baboons and hyenas were identified as the most problematic wild animals in the study area. Habitat destruction due to hydropower development and road construction, human-induced fire for land clearance for agriculture and settlement, and the collection of firewood and wild honey were identified as major threats to wildlife. Surprisingly, the majority of respondents showed positive attitudes towards wildlife conservation despite the destruction caused by wild animals, which is promising for future conservation in the KSD. Therefore, developing compensation schemes and providing regular awareness training for local communities about conflict mitigation strategies and the effects of uncontrolled fires on biodiversity are crucial to minimizing negative impacts for both parties and sustaining positive attitudes towards wildlife conservation and coexistence. Development activities in the study area should not compromise biodiversity conservation goals. Moreover, field observations confirmed that the area is endowed with unique wildlife resources of national and international conservation relevance; however, these resources are under severe threat, calling for urgent conservation measures.

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Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statement

No ethical statement was reported.

Use of AI

No use of AI was reported.

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Author contributions

Conceptualization: ZT, YB, AG. Data curation: YB, ZT, AG. Formal analysis: ZT. Investigation: ZT. Methodology: KH, ZT, YB, AG. Software: ZT. Supervision: YB. Writing – original draft: ZT. Writing – review and editing: AG, KH, YB.

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Data availability

All of the data that support the findings of this study are available in the main text.

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